AMENDMENT(S) TO THE SPECIFICATION

Please replace the paragraph beginning at page 3, line 26, with the following rewritten paragraph:

The invention also ~~refers to~~ includes the apparatus used to carry out the procedure, which includes illumination and observation means, details of which will be provided further on in this ~~report~~ application.

Please replace the paragraph beginning at page 7, line 28, with the following rewritten paragraph:

The features and advantages of the method and the apparatus of the present invention will be clear from the detailed description of the three preferred embodiments thereof which will be given hereinafter by way of non ~~limitative example~~ limiting examples with reference to the accompanying drawings, in which:

Fig. 1 shows a diagrammatic depiction of a first embodiment of an optical metrology apparatus for determining the three-dimensional topography of an orifice according to the invention, used in particular to measure micrometric, tapered and other similar nozzles in the flexible circuits of print heads in inkjet printers;

Fig. 2 shows a diagrammatic depiction of a second embodiment of an optical metrology apparatus according to the invention;

Fig. 3 shows a diagrammatic depiction of a third embodiment of the invention;

Figs. 4 and 5 are partial cross-sections of two examples of the various possible topographies that the apparatus is able to measure with the method of the invention;

Fig. 6 is a diagrammatic drawing showing the method of the invention in a condition in which the whole incident beam is propagated through the orifice without being reflected on the inner surface of the orifice;

Fig. 7 is a diagrammatic drawing similar to that in Fig. 6, in which, due to the higher value of the radius of the projected pattern on the focus plane, a part of the incident beam is propagated directly ~~though~~ through the orifice and another part is reflected onto its inner surface, which results in two images of the pattern on the camera plane[[.]];

Fig. 8 is a diagrammatic drawing, similar to those in above Figs. 6 and 7, in which the radius of the projected pattern onto the focus plane ~~coincided~~ coincides with the radius of the inner contour of the orifice on the same plane, which results in a single image of the pattern on the camera plane[[.]];

Fig. 9 is a diagrammatic drawing, similar to those in Figs. 6, 7 and 8, in which the radius of the projected pattern onto the focus plane is greater than the radius of the inner contour of the orifice analysed on the same plane, which also results in a single image of the pattern on the camera plane[[.]]; and

Fig. 10 is a graph showing, for a series of images, the value of the radius of the circular projected pattern on the focus plane and also the radius of the virtual circular pattern associated with the part of the incident beam that is reflected onto the inner surface of the orifice.

Please delete the paragraph beginning at page 9, line 6, and ending at page 10, line 29, in its entirety.

Please replace the paragraph beginning at page 11, line 8, with the following rewritten paragraph:

The computer processing means (3) comprises a computer (12) running the appropriate software and the algorithms needed to measure the contours on different planes and to reconstruct, in three dimensions, the tapered nozzle (13) of the object being analysed (14) after following the method of the invention. The shape of the nozzle (13) can be seen in the partial cross-section in Fig. 4 ~~of the drawings attached in the present specification~~.

Please replace the paragraph beginning at page 11, line 33, with the following rewritten paragraph:

According to the method of the invention, the object being analysed (14), that is, the flat, flexible plate having a number of tapered nozzles (13), is fixed horizontally to the base of the microscope slide (15) with the wider opening of the nozzles ~~(14)~~ (13) facing the illumination means (1).

Please replace the paragraph beginning at page 13, line 13, with the following rewritten paragraph:

The apparatus then moves the plate to be analysed (14) to the next plane (z_3) and the process is repeated fifty times for the example of the embodiment implementation described (plate (14), 50 μm thick), that is, the sampling of the structure of the nozzle (13) is carried out in fifty focus or test planes (z_1, ..., z_{50}), with a spacing between planes (z_i-z_{i+1}) of 1 μm, even though those skilled in the art will understand that the number of focus planes in the sample could vary based on the thickness of the plate (14) and on the requirements of the parameters of analysis. The apparatus thus acquires the topography of the inner surface of the nozzle (13) plane by plane (z_1,...z_i,...z_n). From said topography, the apparatus is ~~capable~~ able to obtain the output data required for the nozzle (13): diameter (maximum and minimum), slope of wall, deviations from the nominal figure, position of the axis, etc.).

Please replace the paragraph beginning at page 13, line 30, with the following rewritten paragraph:

In the embodiment shown in Fig. 2, the apparatus uses a pattern representation system of a higher quality. This is a system that uses a liquid crystal on silicon (LCOS) pattern representation system (16) associated with a light beam splitter (17) that receives light emitted from the source (5). The remaining parts and operation are essentially the same as in the embodiment shown in Fig. 1.

Please replace the paragraph beginning at page 14, line 1, with the following rewritten paragraph:

The apparatus according to the third embodiment, which is diagrammatically shown in Fig. 3, allows the measurement of nozzles (13a) in a truncated cone shape with a prism shaped recess (19), as shown in the enlarged, partial cross-section in Fig. 5. This recess may be used to hold the electronics needed for operation of the flexible circuit (14a) provided in an inkjet print head. As [[it]] can be seen from Fig. 3, the apparatus is also provided with a liquid crystal on silicon (LCOS) pattern representation system (16) associated with the light beam splitter (17), the

remaining parts and operation being essentially the same as in the embodiment shown in Fig. 2. Nevertheless, in this embodiment the mirror (7) has been replaced with another beam splitter (17') to allow the observation and topographical measurement of the area of the recess (19) of the nozzle (13a) with an additional camera (18), such as a CCD camera. It will be, however, understood that to measure this topography, which is shown in Fig. 5 (as well as other, different topographies) the pattern representation system (6) shown in the embodiment in Fig. 1 may also be used.

Please replace the paragraph beginning at page 16, line 3, with the following rewritten paragraph:

By ascertaining the superimposing condition of the images (I) and (I') [(R)=(R')] it is possible to find the radius (r_0) of the nozzle (13) on the focus plane (z_i) for a given angular coordinate, according to the graph shown in Fig. 10. In ~~said~~ Fig. 10 it can be seen that as the radius (r) of the projected pattern (P) on the series of images increases, the radius (r') of the virtual pattern decreases, until it converges ~~into~~ with r at the point of intersection (s), whose value on the coordinate axis corresponds to the radius (r_0) of the orifice on the focus plane for the corresponding angular coordinate of the contour of the nozzle.

Please replace the paragraph beginning at page 16, line 15, with the following rewritten paragraph:

The method used in the invention is extremely quick; ~~it has been demonstrated~~ a data acquisition and processing time when measuring the contour of the nozzle of close to 1s for each plane (z_i) has been demonstrated. Results can be said to be extremely effective, as an extraordinary precision was achieved. Tests conducted provided an estimated uncertainty of approximately 2%, with an angular deviation of $\Delta\theta = \pm 0.5°$, a deviation on the axis (z) of $\Delta z = \pm 0.1$ μm for nozzles with taper angles of approximately 17°, and a deviation on the axis (z) of $\Delta z = \pm 0.15$ μm for nozzles with taper angles of approximately 12°.

Please replace the paragraph beginning at page 16, line 26, with the following rewritten paragraph:

Even though Figs. 1 to 3 show different embodiments of the apparatus of the invention with the illumination means (1) ~~in the upper part of~~ above the microscope slide (15) and the observation means (2) ~~in the lower part of~~ below the slide, it will be understood that the arrangement of the parts in the apparatus could be otherwise. For example, they could be inverted, with the illumination means (1) ~~in the lower part~~ below and the observation means (2) ~~in the upper part of~~ above the microscope slide (15).

Please replace the paragraph beginning at page 17, line 8, with the following rewritten paragraph:

~~Once having been sufficiently described what~~ Although the method and the apparatus of the present invention ~~consist~~ have been described, in accordance [[to]] with the ~~enclosed~~ drawings, it [[is]] should be understood that any ~~detail~~ modification can be introduced as appropriate unless variations ~~may~~ alter the essence of the invention as ~~summarised~~ summarized in the appended claims.